Logistical Support of Air Reserve

Component

Mobility Rainbow Units

Graduate Research Project

Kerry H. Nicholls, Major, USAFR

AFIT/GMO/ENS/00E-7

DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY

AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

The views expressed in this thesis are those of the author and do not reflect the official policy or position of the United States Air Force, Department of Defense, or the U. S. Government.

AFIT/GMO/ENS/00E-7

Logistical Support of Air Reserve Component Mobility Rainbow Units

GRADUATE RESEARCH PROJECT

Presented to the Faculty

Department of Operational Sciences

Graduate School of Engineering and Management

Air Force Institute of Technology

Air University

Air Education and Training Command

In Partial Fulfillment of the Requirement for the

Degree of Master of Mobility Studies

Kerry H. Nicholls, B.S.

Major, USAFR

June 2000

Acknowledgements

I would like to thank those individuals whose support and cooperation made this project possible. First, I thank my advisor, Major Alan Johnson, Ph.D., for his support and guidance in this research. Also, my appreciation goes out to the staffs at Air Force Reserve Command, 22nd Air Force, and various members of the air reserve components for providing insightful perspectives on the topic at hand. A special thanks to my sponsor, Major General Louis Ferraro, Jr., Mobilization Assistant to the Director of Logistics, Headquarters Air Mobility Command, for his direction, support, and the support of his staff for this project.

A hundred thanks to Ms. Janice Missildine, for her extensive searches for related materials on this paper and many others. My gratitude also goes to my fellow members of the Advanced Study of Air Mobility Class of 2000 for helping me keep my focus and drive. Also, my appreciation to the Air Mobility Warfare Center leadership for having the vision to provide this Air Mobility Masters program and their continuous efforts to improve the program, and the Air Force Institute of Technology Instructors for their eternal pursuit of excellence in education and creating more knowledgeable officers.

Finally, a heartfelt thanks to my parents for their endless inspiration.

Table of Contents

Abstract

One of the military's biggest challenges in maintaining its defense capabilities is deciding on the means to achieve the optimal force integration of its active and reserve components. While the Air Force excels in this area, meeting the continuing challenge includes adopting new approaches to organizing contingency operations.

One such new approach is assigning a certain air mobility mission to a contingency unit composed of multiple ('rainbow') Air Reserve Component (ARC) forces. Recently the Air Force has begun testing the effectiveness of a contingency operation constructed with a rainbow matrix organizational design. Employment of such a mixed organization may hold promise, but it also poses some problems. In the logistics arena, these problems fall into the areas of command and control, continuity, and supply issues.

This study uses Joint Task Force Shining Hope and others to explore the capabilities and limitations of command and control, continuity, and supply issues, and to highlight the impacts of these areas on mission accomplishment. When a contingency is composed of strictly matrix design ARC rainbow assets, special considerations need to be made in all three areas if the unit is to meet mission requirements. Of particular concern are the influence of the volunteer force, and the beneficial effects on continuity that a Lead Mobility Wing format offers.

The Air Force's exploration of new contingency unit composition and logistical support methods serve as important steps in achieving optimal force integration throughout the Department of Defense.

Logistical Support of Air Reserve Component Mobility Rainbow Units

I. Introduction

Recently the US Air Force has found itself in a position to explore the use of the matrix approach to organizational structure in some of its contingency operations. This paper examines the Air Force's test of the theory that a matrix organizational design can lead to bolstering the organization's capability for carrying out its mission (Griffin, 1999:368-371). In this examination, the Air Force maintains control over the new design of the organization involved in the contingency operation (independent variable in the test), and is interested in the potential benefits/drawbacks to be realized (dependent variable).

More specifically, only in the last two to three years has the Air Force tried a new type of matrix organization to fulfill certain mobility operational requirements, tasking Air Force Reserve and Air National Guard (Air Reserve Component, or ARC) forces to compose the organization. The new matrix approach consists of a "rainbow" unit that carries out a mission that in the past was a responsibility of an active unit. The rainbow organization is composed of representatives of multiple ARC units. A typical rainbow unit may consist of two aircraft, associated aircrews, and support personnel and equipment; and like packages from one or more other ARC units, all possibly on a rotating basis.

This paper attempts to answer the following research question: **Is mission accomplishment capability significantly influenced by logistical support elements in ARC mobility rainbow units?** For purposes of this study, ARC mobility rainbow units are defined as Air Mobility Command-gained airlift Air Force Reserve and Air

National Guard contingency units comprised of aircraft and personnel from multiple units (matrix design). "Logistics support" is defined as support efforts that occur in theater—that is, intermediate aircraft maintenance, supply, and transportation in direct support of a contingency at a deployed site. Management of other elements of a contingency unit, such as aircrews, administrative support elements, and security forces, are not addressed in this study. It is beyond the scope of this paper to address all organizational facets of a contingency unit. Given this logistics-heavy approach, answers to the following investigative questions will be explored:

- How can command and control be structured to maintain positive control of human and support equipment resources in an ARC matrix rainbow unit?

- How much of an impact is continuity on mission accomplishment, and if the impacts are great, what can be done to aid stability between rotations?

- What are the unique supply issues and other logistical support issues regarding an ARC rainbow unit's ability to provide mission capable aircraft?

Force Integration

Our national defense planning is based upon the Total Force Policy, which envisions a military force made up of active and reserve forces. The distribution of forces and wartime missions among the components of the Department of Defense (DOD) ensures that no major military action involving US forces can take place without the use of their reserve components. While this stance was maintained in the Cold War years, it has become even more apparent in the post-Cold War period of active force downsizing. Consequently, the employment of reserve forces in the Total Force can be thought of as an enabler in DOD initiatives. The reserve contributions have not gone unnoticed; the reserve forces are recognized as competent full partners in the national defense effort that are increasingly called upon to support contingencies worldwide. The

only question remaining is the optimal force integration of the active and reserve components. The trial of ARC mobility rainbow units is one potential answer to this question, mindful of the potential impacts to reserve personnel availability in the volunteer service system.

Over the years the Air Force has attempted to answer the force integration question in the mobility arena by experimenting with varying organizational designs when conducting contingency operations. Traditionally, single ARC units have been tasked to augment active component operations in one of two capacities: 1) augment an active unit with a relatively small package of aircraft, aircrew, and/or support elements; or 2) augment an active mission with a sizable package consisting of numerous aircraft, aircrews, and support elements. This type of employment fits under the Air Force senior leaders' view of the ARC's role as being *supplementary* to the armed forces. However, given the end strength of today's armed forces; the US's role in shaping factors leading to global stability; the need to possess response capability to capricious conflicts and crises; and economic realities facing the military, the view of the ARC followed an inevitable shift to that of a *constituent* of the armed forces. In other words, the reserve components are no longer seen as *assisting* the active component in completing the mission, but rather as *permitting* the services to accomplish their missions (Cohen, 1999:26). Stated yet another way, military planners had always assumed availability of the reserve components to augment the actives in *wartime*. Now the reserve is seen as a necessary contributor to *peacetime* operations (Killingsworth and others, 1993:6-7).

Air Reserve Component Rainbow Units

Subsequently, the Air Force has recently explored the use of matrix designed organizational structure through the employment of ARC rainbow units carrying out

portions of the mobility mission. Of late, the most notable of these operations is Operation Shining Hope, the mission event that transported humanitarian aid to victims of the Kosovo conflict March – July 1999.

Due to the recent nature of this type of organization employment, little documentation exists that comprehensively describes the degree of inherent success/failure that this adaptation of the matrix design presents to the Air Force. Also, there is little analysis of the design's characteristics that managers could manipulate to their benefit. If nothing else, this study may serve to document the gains and challenges associated with AMC-gained ARC mobility rainbow units.

To conduct a meaningful assessment of the subject matter, qualitative research was conducted to gain information on ARC rainbow operations to date. Presentations and notes from the Shining Hope Hotwash conducted 14-15 August 1999, and interviews with presenters and Shining Hope managers and participants, served as the base source of information. Those interviewed included managers and planners with experience in ARC mobility rainbow operations. They hold positions in US Transportation Command (TRANSCOM), Air Mobility Command (AMC), Air Force Reserve Command (AFRC), Air National Guard (ANG) Readiness Center, and US Air Forces in Europe (USAFE). Since true ARC rainbow operations are few due to the newness of the concept, articles and reports on similarly structured operations such as Coronet Oak and Coronet Nighthawk were also reviewed for applicability (these operations accomplish airlift and counter-drug missions in the Central and South American regions, and are carried out exclusively by rotating Reserve and ANG units). Force employment journals (such as Strategic Review) and articles from AFRC and ANG publications rounded out the data sources. Also serving as a source of information was an assortment of Rand studies on reserve component integration.

Since the nature of ARC rainbow operations seems to be rotational in nature, where ARC units become involved in the operation on a rotational basis usually measured in weeks, *continuity* of operational support is a major concern. It poses perhaps the biggest challenge in not only each of the investigative questions listed above for any single operation, but also between operations—as in planning future operations (Poore, 1999).

Regarding logistics issues, specific areas of concern include: presence of a lead wing-type entity (where does the CINC structure fit in, are the resources 'chopped' or otherwise attached to the CINC, are all functions 'chopped,' what is the chain of operational and administrative command); equipment ownership issues—supply and resupply functions; and services to the personnel from the host unit or airfield. Another issue is what organization is ultimately in charge—active or reserve component?

By comparison with the Army, the Air Force has taken the lead in meeting the Total Force planner's major policy challenge (Millet, 1999:24-25). By investigating different organizational designs such as the matrix, the Air Force provides evidence of its bona fide attempt to meet the active-reserve force integration needed to fit into the nation's missions of engaging in real world contingencies. This is a natural and necessary growth out of the Cold War-era stance of mass mobilization and total war. The integration mix is evolving to meet the much more likely situation of "a recurring series of overseas American interventions that do not meet the time and scope of major regional contingency status, yet require reserve unit augmentation" (Millet, 1999:23).

Making the ARC matrix organization work could bring the Air Force one significant step closer to achieving the optimal force integration scheme called for in the Total Force Policy. From the ARC's point of view (and active component's view, as well), the goal is readiness to meet mission requirements, but eventually not at the expense of the airmen involved in the voluntary service system. After all, quality of life

issues are seen as possibly the most important to the recruitment and sustainment of a capable fighting force for the foreseeable future. Also, lessons learned could be run through the Army-green distillery, and the refined product could be used as tools for formulating and implementing the necessary force-mix posture for the Army and possibly other services.

II. Synopsis

Setting the Stage for ARC Mobility Rainbow Units

The mission the ARC has held since its inception is training for emergency contingency (wartime) mobilization. Many believe that this concept was based entirely on the Cold War environment. In post-Cold War times, the requirements of peacetime and contingency operations have converged, as evidenced by the ARC taking on the mission of peacetime augmentation of active forces. The goal of AMC's Tanker Airlift Control Center (TACC), charged with employing military air transportation assets to meet airlift requests, is to cultivate ARC mobility forces in a limited and defined manner, thereby gleaning what it can from the ARC without seriously impacting its resources. It has been successful. Indeed, no other service depends more heavily on the reserve components for augmentation, not just for wartime mobilization, but also for on-going peacetime operations (Killingsworth and others, 1993:6-7).

Mobility is not limited to the Air Force. All three services incorporate departments that specialize in transportation logistics. One could argue that the Navy's existence, by its very nature of being seaborn, is rooted in its ability to project its forces worldwide via marine avenues. However, with the drastic reduction of the US military's footprint in overseas land bases, the Air Force's ability to deliver troops and equipment globally in a matter of days or hours brings the importance of mobility into focus. In the chaotic environment following the Cold War, the US stands alone with its capability for mobilization. Equal to or perhaps even more than its strategic nuclear force, this mobility competence defines its status as a superpower (Wooley, 2000).

In past isolated cases, AMC received excellent support from the ARC by handing over entire mission types to the ARC to manage largely on its own. An example of this

is Coronet Oak, which provides a variety of theater airlift for US Southern Command. Since 1977 Coronet Oak has transported cargo and personnel to/from American military and counter-narcotics operations throughout Central and South America; US embassies and consulates; and disaster relief functions. The missions continue to be flown by ARC C-130 units exclusively, on a two-week overlapping rotational basis. This approach allows the ARC to rotate and schedule aircrews and support personnel according to the availability constraints of reservists (Pulley, 1997:7).

In the 1990s through today, US foreign policy objectives have drawn on mobility forces—and Air Force mobility forces in particular—more than ever before. Evidence of this comes from the observation of a shift to a greater proportion of shorter notice, high priority missions. Traditionally, the active component (AC) has provided the air mobility system's fast reaction attribute, and picked up these types of missions. Fulfilling all of the missions became a problem in the 1990s when the proportion of short notice missions increased simultaneously with the drawdown of the AC (Killingsworth and others, 1993:v). Active component aircraft and personnel have been further stretched to the limit with the phased retiring of the C-141 fleet. One could argue that today's mobility system is stressed not necessarily by greater numbers of missions and flying hours, but rather by the increased volatility of the operating environment. The AC can no longer supply the flexibility needed to absorb the volatile demand, thus the change to using ARC forces to augment the AC in peacetime missions. As indicated earlier, the nature of the 'peacetime' mission has converged with the wartime mission, and it would be hard to support the notion that the ARC is losing out on training time for its wartime mission (historically the *only* mission of the ARC) when flying the peacetime taskings (Killingsworth and others, 1993:47, 50). After many years of Total Force evolution, DOD now finds itself in a time when integration of the reserve components in the planning

process of the AC has virtually become an accepted part of military culture, and the Air Force leads this effort (Killingsworth and others, 1993:15).

Against this background, TRANSCOM and the ARC recognize there are a number of options to keep the mobility system flexible and responsive to the many diverse demands placed on it. The challenge lies in assessing the options and adopting the most productive and complimentary measures. TRANSCOM's and AMC's intent to further employ the ARC is the impetus of matrix design ARC mobility rainbow units. Such contingency units draw on a number of ARC units to form an impromptu organization tasked with a mission. Formation of these temporary units is an effort to provide the mobility system with greater responsiveness and flexibility (Killingsworth and others, 1993:53).

Remarkable in this area is the lack of formal agreements between AMC, AFRC, and ANG in how the ARC is to be used. It becomes obvious that all three are composed of people genuinely intent on providing the mobility force needed to safeguard national interests.

Examples of ARC Mobility Rainbow Units

To explore the effectiveness of the ARC mobility rainbow unit matrix design, one needs to turn to the area of intratheater airlift. While it is true that ARC aerial refueling units have participated in many contingencies in the last ten years, it is also true that the contingency units have not adhered to the matrix design. Rather, the contingencies typically call on one or more refueling units to augment an AC operation, with an AC unit retaining command and control of the contingency. The difference with the type of contingency unit being explored in this study lies in mission assignment and composition of the unit. The newer approach consists of a newly formed contingency unit with representation in the form of aircraft and personnel from multiple stateside mobility

wings, with the collective assigned responsibility for a mission that traditionally was carried out by, or at the very least controlled by, an AC mobility unit.

One may cite Coronet Oak or Joint Guardian (previously known as Joint Forge) as examples of the new approach to ARC contingency units, but this would not be entirely correct.

Joint Forge occurred in the mid-1990s. It consisted of portions of eight AFRC C-130 units teamed with portions of six ANG C-130 units performing intratheater sustainment airlift from Ramstein AB, Germany, to peacekeeper troops in the Balkans, Jul – Oct 97. The collective unit was known as the 38th Airlift Squadron Provisional (38 AS(P), also known as Delta Squadron), falling under the 86th Airlift Wing at Ramstein. Delta Squadron was initially mentioned in USAFE Operation Order (OPORD) 4242, which later became OPORD 8623. The sustainment airlift mission continues to this day under the guise of Joint Guardian, with AFRC and ANG units rotating into Delta Squadron to support the NATO-led Stabilization Force in Bosnia-Herzegovina (Allen, 1999; Miller, 1997:24).

Coronet Oak and Joint Guardian have the benefit of largely being planned well in advance. Along with this planning comes a continual form of senior leadership and guidance. Each has AC oversight, with mission specifics provided by the uninterrupted AC leadership, and at least some logistical support from the host unit. (In mid-1999, Coronet Oak was moved from Howard AFB, Panama, to Muniz ANG Base, San Juan, Puerto Rico, and is now hosted by a full time operations commander and minimal other support personnel.) Also, with Joint Guardian, a single ARC unit is assigned as the Lead Mobility Wing (LMW) for a specified period, typically one month. During this time, the LMW is responsible for scheduling flying missions and coordinating logistical support for all participating units. Many lessons can be learned from observing these collective

unit operations, but they still do not serve as the best example of the contingency unit in question.

The most notable example of the minimally-planned, matrix design ARC mobility rainbow contingency unit is Shining Hope. Joint Task Force Shining Hope was headquartered in Einsiedlerhof, Germany, adjacent to Ramstein AB, and was commanded by Maj Gen Bill Hinton. Shining Hope provided shelter and prevented mass starvation among the Kosovar refugees who fled the hostilities in Kosovo. From 3 Apr 99 until the end of Operation Allied Force and beyond (into Jul 99), more than 500 sorties were flown to deliver urgently needed humanitarian supplies mostly to Rinas Airport, Tirana, Albania. There, the reception and distribution of the aid materials commenced (Cohen and Shelton, 1999:18). The ARC's involvement in Shining Hope consisted mostly of eight rotations of 14 days each of seven C-130 aircraft (E, H2, and H3 models), and associated aircrews and support personnel and equipment. The aircraft operated out of Ramstein AB. The 22nd Air Force (AFRC) assumed responsibility for the contingency unit; AC involvement was minimal. The AFRC provided most of the aircraft, personnel, and equipment to the contingency (five aircraft in each rotation), supplemented by ANG assets (two aircraft in each rotation) and, near its completion, AC assets (Poore, 1999). The unit airlifted 7549 passengers and 3866 tons of cargo in support of the humanitarian mission and related operations (Citizen Airman, 1999:13).

Due to the very short lead time, planning for the contingency was minimal, and rushed at best. A key point here is that due to the hurried nature of mission and contingency unit formulation, a LMW command structure was, for the most part, not adopted (to be discussed in detail in Chapter III). The 22 AF formed a Support Cell at Dobbins Air Reserve Base, Marietta, GA, to provide necessary support. Another key point is that AFRC endeavored to meet the requirements of Shining Hope with an all volunteer force. Even though no one knew how long Shining Hope would last, at the

start of the contingency using a volunteer force was not seen as a radical approach (Poore, 1999). Thus, the ARC's contribution to Shining Hope was the matrix design mobility rainbow organization.

There is an element of newness to this type of approach to carrying out a mission. In the past, when TACC received the request for airlift to support a contingency, it filled the requirement by shifting missions from training to the 'surge' operation. This allowed the overall level of flying to remain relatively constant. Although airlift training and operational missions are often similar in character, there is a distinction between the two. Training missions are scheduled well in advance, while contingencies can appear with little or no warning. Historically, the ARC was able to provide extensive augmentation to the AC in training missions, where requirements are stable, or at least predictable. When contingencies occur with little warning, the AC typically filled the need (Killingsworth and others, 1993:v, 9). Having the ARC exclusively fill the need is somewhat of a novel concept.

Senior DOD officials encourage the exploration of new force integration methods. Indeed, the Reserve Component Employment Study 2005, required by the FY2000-2005 Defense Planning Guidance (DPG), addresses this very issue. The study includes discussion of the four objectives of the DPG tasking. Accomplishing traditionally AC missions with ARC contingency organizations falls under the DPG study objective of "develop(ing) and assess(ing) alternative Reserve Component employment roles and force mix concepts, including an evaluation of costs, benefits, and risks for each option" (Reserve Component Employment Study 2005, 1999:Annex A, 1). More specifically, ARC contingency organizations help answer one of the Essential Elements of Analysis of this objective: "What are alternative active component—reserve component force mixes and employment concepts to support the National Military Strategy?" (Reserve Component Employment Study 2005, 1999:Annex A, 5).

Much of the research for this study came in the form of personal interviews and telephone interviews with individuals who either participated in Shining Hope in Europe, worked in the Support Cell at Dobbins ARB, provided leadership from HQ AFRC and 22 AF, or observed the overall management of the contingency. Many of the personal interviews occurred during a visit to HQ AFRC and 22 AF in Jan 00.

III. Command and Control

Let us now turn to answering the first of the investigative questions: **How can command and control be structured to maintain positive control of human and support equipment resources in an ARC matrix rainbow unit?**

Regarding Shining Hope, all of the individuals interviewed agreed that Shining Hope was a success. The mission was accomplished without serious incident, and valuable experience was gained by virtually all participants. The experience came from negotiating the logistical and operational hurdles presented when deploying different aircraft models and personnel from multiple units. Teamwork and dedication to the mission were credited with overcoming these hurdles. However, regarding *how* Shining Hope was carried out, many interviewees expressed frustration. Cases of inefficient practices and inherent difficulties in day to day operations abounded. Notable though was the fact that no fingers were pointed at individuals for being at fault for the less-than-optimal efficiency in the operations. Rather, many pointed to specific weaknesses of the organization. Many of the stories seemed to have a common thread, that of a shaky command and control foundation.

When pondering the best way to maintain control over a diverse and dynamic organization, one must consider the options for command and control (C2). On one end of the command spectrum is a virtual lack of command structure. Such was the situation observed in Operation Allied Harbour in Apr – May 99. Allied Harbour saw the deployment of 8000 NATO troops from 20 nations to Albania under Allied Command Europe Mobile Force (AMF) to process and deliver humanitarian aid to the Kosovar refugees. NATO found it exceedingly difficult to control the relief effort. Each national contingent, which conducted its national operations and/or supported nongovernmental

organizations, concentrated on its own projects and tasks. Little or no cooperation and coordination was observed, hindering NATO's efforts to put reins on the various organizations and reap the benefits of a concerted effort. "It is total chaos…no one wants to give up full control of their troops to NATO," observed one senior UK officer closely involved in the operations (Ripley, 1999:24).

Since infrastructure was lacking, the contingents sought to secure resources and facilities to allow their operations to function. Consequently, all the contingents competed to locally purchase equipment, rent buildings, and hire labor. The resultant competition inflated prices for goods and services, which in turn wasted financial resources. Obviously, this is a formula for inefficiency and unproductive diversion of resources. The situation exasperated many of those involved with the collection, handling, and distribution of the aid materials, especially when inefficiency could be measured in human suffering left untreated. Finally, NATO assigned UK Army Lt Gen John Reith to lead the AMF in pulling the various national contingents under a single chain of command. The US's Shining Hope was part of Allied Harbour (Ripley, 1999:24).

At the other end of the command spectrum is the precisely defined C2 function inherent in an autonomous military organization, maintaining complete control over the unit.

In the realm of contingency operations, the C2 function lies somewhere between the two extremes. It is the goal of planners and senior leaders to gravitate toward the complete control side of the spectrum, but at the same time not invest an exorbitant amount of resources to the C2 structure. Senior leaders also do not want to fall into the micro management trap.

Lead Mobility Wings

For a variety of reasons, the Air Force has elected to implement an Expeditionary Aerospace Force concept for addressing operational tasks. Under the concept, Aerospace Expeditionary Forces (AEFs) provide the operational capability using predetermined scheduled sets of forces. For each AEF, a LMW is identified. The LMW is charged with providing

> group or wing-level leadership at expeditionary locations where there is no preexisting command structure. LMWs provide the expertise needed to assess reception airfield capabilities, determine follow-on force requirements…and establish a mobility conduit for the flow of resources. (Hogle, 1999:2)

Integral to the LMW concept is sufficient lead time for the tasked wing to plan for adequate C2 of the contingency, and the ability to provide C2 for the duration of the contingency. Neither of these aspects was present with the ARC's involvement with Shining Hope. Still, the LMW concept was not completely absent.

The 302nd Airlift Wing from Peterson AFB, Colorado Springs, CO, was one of the first units to deploy to Ramstein for Shining Hope. The wing also served as the pseudo-LMW for the first few weeks of the contingency. Senior leaders from the unit were successful at carving out the necessary facilities and infrastructure support from the host base (Ramstein AB). This was an important undertaking. Ramstein AB was a flurry of activity at the time, serving as the airlift hub for the entire Allied Force operation. Personnel at USAFE and the 86th Airlift Wing (based at Ramstein) did not have the time to help establish yet another contingency operation. Besides, from the start Shining Hope was to be an ARC responsibility, and the AC saw no need to get involved with the operation outside of a few basic host base support functions (ramp space, facility use, troop feeding, and the like) (Boyum, 1999).

Also, the 302 AW had its work cut out for itself. The unit, or any other organization for that matter, did not know the extent to which Shining Hope would run in

terms of length and scope. Nevertheless, the 302 AW served in the lead unit role in a manner to secure a sound foundation for a contingency of largely undetermined design. Later, in late July and early August, representatives from the 302nd returned to wrap up the operation and clear the host base of all vestiges of the contingency (Grote, 2000). All told, this unit became widely recognized for providing much of the necessary framework construction and dismantling associated with Shining Hope. The unit was also responsible for 14% of the flying missions in the contingency (Citizen Airman, 1999:13).

Curiously, despite its hefty contribution to the contingency, the 302 AW did not have the luxury of time for planning its involvement. Rather, the 302nd was more of a victim of circumstance and timing. Originally, the wing's schedule in spring of 1999 included two aircraft bound for the Pacific region for airlift support. Ultimately, however, these two aircraft were diverted to the European region instead, to help initiate the new Shining Hope airlift mission—coinciding with the 302nd being identified as the initial LMW (Snyder, 2000). Regarding the closing out of the operation, it just so happened that the 302nd was previously scheduled to deploy at least two aircraft and associated personnel for Joint Guardian at Ramstein AB in Aug 99. Subsequently, the unit's focus changed when it became apparent that Shining Hope was drawing to a close in late July and early August (Davis, 2000).

Notable here is the fact that no formal agreements between the 302nd and AFRC or 22 AF (or AMC or TACC) had been in place before Shining Hope appeared. Yet the 302nd readily shouldered a great deal of responsibility in setting up and closing down the operation. Perhaps this readiness and eagerness to serve in any capacity is indicative of the posturing of all other ARC mobility wings. This posturing includes willingness and capability to serve in ways that are for the most part new to the ARC.

Leadership Roles

Another explanation for the 302 AW's actions is the notion of niche filling. In an ad-hoc organization such as Shining Hope, it is easy to imagine middle- and higher-level managers' perceptions of the hurried nature of the organization's formation. There exists some confusion—that of individuals seeking to identify both their part in the mission, and how they can best contribute to the organizational effort. Essentially, there exists a power and management vacuum. In such an environment, those who assert themselves and take the initiative to tackle their (and the organization's) work responsibilities in an organized fashion, find themselves garnering respect and emanating authority. Other individuals in the organization are likely to recognize this source of direction and heed the perceived authority (Voorhees, 1999).

Due to its newness and relatively unique configuration, an ARC rainbow contingency unit such as employed in Shining Hope is likely not addressed adequately by any existing doctrine. Even if 'appropriate' doctrine does exist, it would be hard to apply it in its purest sense, since each rainbow contingency unit would likely be unique from others that preceded it, given it was tailored to meet the unique conditions of the new operation and its environment. Joint Publication 4-0, Doctrine for Logistic Support of Joint Operations, may be the best source of doctrine for ARC rainbow contingency units.

Therefore, when the make-up, size, and scope of the mission are doctrinally fuzzy, there is an opportunity for managers to define their roles as the operation is set up and progresses (Voorhees, 1999).

In Shining Hope there were many instances of individuals assuming leadership roles either out of assertiveness or necessity. An example is the role that the maintenance managers assumed. Frequently individuals approached the maintenance officer or maintenance superintendent with requests for manpower and equipment

support, ground transportation, administrative assistance, and other requests that had little to do with the officer's or NCO's primary duty of maintaining aircraft. Why did this happen? It is impossible to pinpoint reasons, but one could reasonably speculate that maintenance managers are historically known for deciding on or directing action, for the sake of timely task accomplishment. This seems to hold true even when the maintenance manager is addressing issues falling outside of their accepted job responsibilities. Once again, certain individuals may recognize a leadership vacuum and fill the requirement, whether or not such action is expected of them. In the logistics arena, maintenance managers are prone to do just that since it seems like a natural extension of their general logistical support background (Grote, 2000).

In Shining Hope there were Reserve Liaison Officers assigned for a period of weeks (one at a time, typically for two weeks). The primary purpose of having this senior officer present was to ensure that necessary support was made known and obtained from the host unit. There were also rotating Mission Commanders assigned to correspond with the USAFE Air Mobility Operations Control Center at Ramstein, and Current Operations offices in the host unit and at participating wings' home bases. The Liaison Officers and Mission Commanders were kept busy with these tasks, and did not become involved in the day to day events in the logistical portions of the contingency (Crabtree, 2000).

Support Cell

Air Force Reserve Command had the authority to serve as the main support function for the airlift portion of Shining Hope. However, AFRC chose to delegate this role to 22nd Air Force. This more decentralized approach facilitated more efficient communication and coordination with the numerous wings that participated in the contingency, most of which fell under 22 AF. This arrangement was also seen as a

more efficient manner in which to tailor the contingency unit to the task at hand. The 22 AF Plans Division was assigned the responsibility for organizing and sustaining a Support Cell at Dobbins ARB, GA. The Cell operated in the 22 AF Command Post (Ryder, 2000).

The Support Cell initiated the planning for the contingency. As indicated above, in the first couple weeks of Shining Hope, the 302 AW conducted some of the planning and all of the execution functions normally associated with a LMW (Allen, 1999). When the 302nd left Ramstein to return home, some in theater perceived that the LMW concept for the execution function shifted to the wing that had the most assets in theater. Back in the US, those involved in planning and administrating Shining Hope, to include individuals at AFRC, 22 AF, and participating wings, thought of the Support Cell as filling the LMW role (Snyder, 2000). Also, the geographically separated Support Cell at Dobbins ARB remained as the only planning function for the duration of the contingency (Allen, 1999). Even with this, 22 AF had a full plate.

In essence, the Support Cell served as the organizational and information clearing house. Regarding the planning aspects of the contingency, TACC initially attempted to produce a manpower tasking plan (Deployed Manning Document, or DMD) for distribution to ARC units. However, the product was cumbersome, confusing, and proved to be of little value in advertising for and soliciting Reservists and Guardsmen for deployment rotations. This poor outcome was attributed to two important factors:

1) TACC was not adept at formulating a DMD for an ARC mobility rainbow unit. It did not have the experience necessary for directly tasking multiple wings with supplying aircraft and personnel for a matrix design contingency, while fully accounting for the unique considerations associated with, and potential contributions from, ARC wings.

2) TACC was incredibly busy at the time, controlling massive airlift to the European region. It did not have the time or resources to devote to DMD production for an ARC operation (Poore, 2000).

TACC quickly realized that not only was there an initial need for an appropriate DMD, but a recurring need to fill it with each successive rotation (overlapping rotations of aircraft and personnel occurred every two weeks). Therefore, like AFRC, TACC delegated the authority to produce the DMD to 22 AF. In turn, 22 AF tasked the 302 AW with building the initial DMD, working with the first deployed Mission Commander (Col James Glenn, 94th Airlift Wing Vice Commander) (Snyder, 2000). After the initial DMD construction, the Support Cell modified it as necessary, and managed the DMD filling for the rotations. Subsequently, roughly 90% of the Support Cell's effort went into managing and filling the DMD (Poore, 2000).

TACC was not shut out of the operation altogether, however. TACC stayed involved by arranging transportation of personnel and equipment to and from Ramstein AB, and occasionally assisting with DMD position fills. After all, it was AMC who was funding the contingency, and AMC didn't want to totally divest itself from it (Grote, 2000).

For most of the rotations in the contingency, AFRC supplied five aircraft and ANG supplied two aircraft. Of course, with the aircraft came aircrews and support personnel. The total number of personnel for each rotation was approximately 120. Since the rotations overlapped, there were approximately 236 personnel in theater at any given time (Davis, 2000). Thus, there was a need to fill a sizable DMD for each rotation.

Perhaps the most significant factor in filling the DMD is the volunteer nature of the pool of forces. The ARC relies on the volunteer system to gather personnel to support its missions. It had assembled the appropriate individuals in the past with success (Coronet Oak, Joint Forge/Joint Guardian, and others). Different in Shining

Hope was the prospect of continued short notice 'deployments' (rotations) for an indefinite period.

The Support Cell's challenge was to not only identify the proper numbers of personnel for a rotation, but also to identify the personnel with the right skill level in the right Air Force Specialty Code (AFSC—Air Force career area), to fill a certain position on the DMD. Complicating matters further was simultaneous deployment of different mission design series (MDS) aircraft. Ideally, the Cell's goal was to tap ARC wings for aircraft and a full complement of personnel required to support its aircraft operation. However, the volunteer system cannot consistently support this. Inevitably, shortfalls in the DMD occur, and wings and the Support Cell are left with the task of filling the DMD as best they can. This entails "recruiting" personnel from other ARC units and managing waivers to AFSC and skill level requirements, to fill out a particular wing's support package. Since this task happened on a recurring basis (driven by the rotations), it was necessary for the Cell to devote much of its energy to this undertaking. Nevertheless, on more than one occasion adjustments had to be made in theater. This would not be necessary if qualified personnel were identified for DMD positions and actually deployed in those positions (Poore, 2000).

Regarding the skill level of enlisted support personnel, wings and Support Cell planners waived some of the skill level requirements, and filled some of the higher-skilled positions with 3-level technicians (Davis, 2000). Care was taken to limit this practice, however, since a package with too many 3-level technicians could lead to misdistributing duty tasks, overtaxing the relatively few 5-level and 7-level technicians, straining the production effort, and possibly affecting aircraft availability (Grote, 2000; Davis, 2000).

Further exploring the DMD, many of those who deployed felt the DMD model used reflected a very lean deployment package—sometimes *too* lean. Often in Shining

Hope logistics personnel were asked to work 12-hour shifts throughout the deployment, with the likelihood of a day off very remote. Support operations can function under such schedules, but flexibility to react to changing mission requirements is lacking, and safety is a concern. The tense situation could be alleviated in future contingencies if the DMD were to be enlarged even by as little as five percent. The few additional individuals would enable the degree of flexibility in the organization to jump considerably, resembling an exponential relationship between DMD size and unit effectiveness. Some view a minimal DMD increase as making the difference between accomplishing the mission on the fringe of safety bounds, and accomplishing the mission more effectively well within the safety comfort zone for personnel and equipment (Gamble, 2000).

Getting back to the Support Cell's role, filling the DMD became more arduous as time went on, because the number of ARC personnel willing and able to volunteer dwindled. The situation got to the point that DMD position substitutions and waivers could no longer constitute the necessary adjustments for rounding out a rotation package. Aircraft availability was not a major problem; recruiting the aircrews and support personnel was (Davis, 2000). Participating wings even resorted to filling a few of the DMD positions with support personnel having little or no experience with the C-130 airframe. The Support Cell entrusted the wings to fill the DMD positions, or make known to the Cell any difficulties in filling out the DMD. A problem with this practice was that there was no process to identify these questionable DMD position assignments until it was too late—when the personnel arrived in theater (Grote, 1999). Around the first week of July 1999, AFRC wings and the Support Cell could no longer assemble full rotational packages to support five aircraft. TACC was advised of this, and two AC aircraft were assigned to the contingency (Davis, 2000).

Complicating matters was the staffing of the Support Cell. The Cell itself did not have the luxury of being staffed with experienced full-time individuals. Rather, it was

staffed with a handful of full-time planners (with Maj Gary Poore as the point man) and a number of temporary ARC augmentees. The 22 AF was faced with a challenge similar to filling the DMD—recruiting a Cell staff from ARC wings using the volunteer system. The goal of the Cell was to bring staffers in to work in the Cell for as long as possible. In reality the majority of the individuals who volunteered to serve in the Cell (representing a fairly wide range of enlisted and officer ranks) served for a seven day period. The resultant rotation was Sunday to Sunday. When possible, the Cell tried to bring in staffers a day early to facilitate turnover time between rotating individuals serving in the same position. With this type of system comes a continual education and familiarization chore, claiming some of the energies of the full-time and longer rotation individuals. Further, the outlook for attracting individuals who can serve for a number of weeks is troublesome. Maj Poore sees the pool of such individuals drying up due to civilian job responsibilities, retirements from the armed forces, and more competition for duty service from other ARC operations (Poore, 2000).

Potential Options for C2

The preceding discussion outlines the loose C2 structure that existed in Shining Hope. Given the serious constraints of a matrix design ARC rainbow mobility organization, and the volunteer system for fulfilling manpower needs, one can see that airmen in the Shining Hope effort performed admirably. It should be apparent, however, that the approach taken was cause for frustration. If another contingency similar to Shining Hope were to occur without any significant changes to the planning and execution systems, it is probable that its C2 would be handled in a similar fashion. The ARC would then find itself in an acerbic position of knowing beforehand many of the lessons that will be ‘learned’ in the experience, and having to realize these lessons once again (Wilson, 2000).

Following is a listing and brief discussion of other options for C2 in ARC rainbow operations:

♦ Early on, clearly designate wings to serve as the LMW during their rotation, and advertise this information to other wings planning their contributions to the contingency. The earlier this designation the better. Encourage the LMW to sign on for more than one rotation in succession. Personnel packages from the LMW need not be extended; only a few key leaders (or perhaps only one) would need to extend their stay to a successive rotation, providing continuing leadership for the new packages rotating in. Also encourage overlap of at least one senior leader spanning the changeover from one LMW to the next. If possible, identify a first LMW for future, unforeseen contingencies. This would allow the wing to develop a plan for tailoring a deployment package for a variety of contingencies. This may or may not be compatible with the AC's AEF concept, depending on the wing's contribution to a specific AEF package, and projected availability of aircraft and personnel from the wing. At the very least it would give TACC a place to go to for initial contingency support. Also, a wing designated as LMW would likely be more credible when setting up base support functions in theater.

♦ Stand up a Reserve Contingency Planning Center at AFRC, ANG, or the Numbered Air Force level. Establishing a new unit with the mission to train for, plan, and assist contingency operations would be a way to fill some of the gaps left by the volunteer system in responding to long or short notice taskings. This unit could fashion itself after the Joint Transportation Reserve Unit (JTRU) at TRANSCOM. The 142-member JTRU, established in 1990, is composed of reserve service elements (Navy, Air Force, Army, and Coast Guard) with O-6s serving as element commanders. Element members train alongside their AC counterparts, and supplement TRANSCOM's full-time staff in times of preparation for DOD forces and equipment movements. JTRU reservists frequently volunteer or are subject to recall to active duty when world events

flare up and increased TRANSCOM activity is imminent (Wessel, 1996:1-3). Perhaps the Reserve Contingency Planning Center could be joint in the sense that it could be staffed with AFRC and ANG members. Center members could serve as the initial pool of planning and leadership talent from which to draw for support cell functions or in theater functions for future ARC contingencies. To be sure, setting up such a unit would seem to be a prohibitive venture. This much is certain, however: a similar action occurred as recently as ten years ago with the JTRU, at a time when the AC was preparing to shrink significantly.

♦ Establish some type of deployable Logistics function, or Control Element. This type of small unit would also be assigned to an ARC headquarters such as ANG. Its purpose would be to deploy to the contingency site and set up whatever logistics support base possible via coordinating local support or requesting and receiving equipment transported into the theater. Per se, the Logistics Control Element's mission would be akin to the mission of a Tanker Airlift Control Element (TALCE), only with a heavy logistics emphasis (Walker, 1999). This idea would also be difficult to implement, but then again, TALCEs did not exist in the not too distant past.

♦ Taking the Logistics Control Element idea one step further, there could be an ability to have one or more key logistics professionals onsite at the deployed location on a (relatively) permanent basis. The purpose would be to provide lead unit-type guidance to the rainbow units rotating in. If this type of presence was implemented, then perhaps certain milestones of logistics performance areas could be identified at the deployed site. With close observation of the performance areas, adjustments could be made to better tune compositions of packages rotating in. If serious problems were identified, the Logistics leader would turn to AFRC, ANG, or TACC for help (Snyder, 2000).

♦ Conduct a limited Presidential Selected Reserve Call-up (PSRC) to establish a somewhat permanent management structure for the contingency, perhaps in 90 day

increments. This implies that an OPORD be established well beforehand, with management and leadership responsibilities clearly laid out for called-up leaders in both the headquarters organizations (support cell) and at the deployed location (Snyder, 2000). Here too, performance milestones could be used to gauge performance levels of the contingency, and more timely changes made to the operating processes. For a further discussion of PSRCs, refer to Chapter IV.

♦ Plus-up the DMD with a select few AC positions. Essentially this would be a reverse augmentation. ARC planners could be consulted to project what position AFSCs are likely to experience shortfalls over the duration of a contingency. Senior ARC leaders would then need to negotiate with their AC counterparts to arrange for the loan of a few select individuals to augment the ARC rainbow unit (Snyder, 2000). During the negotiations, the ARC representatives could argue that the mission the ARC is picking up belonged to the AC a few short years ago, and that the reverse augmentation arrangement would be another step in the evolution of the Total Force.

Note that in most of these alternatives, measures are being taken to address continuity issues. Discussion of continuity forms the basis of Chapter IV.

IV. Continuity

Discussed earlier were some implications of the volunteer service system the ARC must consider when assembling rainbow units, and the challenges of C2 in the resulting operating environment. Another important factor the ARC needs to consider when building logistical support packages is the degree of continuity afforded in rotating rainbow contingency units. This chapter attempts to answer the question **How much of an impact is continuity on mission accomplishment, and if the impacts are great, what can be done to aid stability between rotations?**

Granted, the answers to this question and the C2 question in Chapter III are broad answers that could be applied to other aspects of a contingency unit besides the logistical support area. Attempting to provide comprehensive answers for the different portions of a contingency is beyond the scope of this study, however. This paper tries to answer these questions as they relate to the logistics function.

First, let us consider the first part of the above question, '**How much of an impact is continuity on mission accomplishment?'** When this question was posed to the individuals interviewed in this study, the general answer was unanimous: continuity is a very important factor in contingency operations success. More specifically, the need for continuity was rated from 'beneficial…good to have,' to 'vital…paramount…absolutely necessary.'

Nature of Rotating Support

For obvious reasons, whenever a group of people with a common assignment is changed, or in this case rotated in and out, continuity becomes an issue. In Shining Hope, degraded continuity dictated that each rotation faced the task of reinventing the

methods of accomplishing the mission. Both the contingency unit in theater and the Support Cell experienced this phenomenon.

For the contingency unit in theater, each successive unit may have a unique approach to workcenter issues. Even if documented guidance exists, such as operating instructions and technical manuals, there are still different approaches and techniques that a manager can employ to successfully carry out the tasks at hand (Poore, 1999). For example, the events required to prepare aircraft for flight are fairly straightforward, but the sequence of these events can be altered to the manager's liking. The end result will be the same—mission capable aircraft ready for launch. A different sequence of refueling, liquid oxygen servicing, preflight or throughflight inspections, and configuration changes, determines when and how technicians and other support personnel are employed. The employment scheme and ripple effects can be felt by supply technicians, schedulers, security providers, and even dining hall workers.

When a new rotation commenced operations and the group's managers were free to make procedure changes as they saw fit, then those who assisted and supported the rotation, including those members from an overlapping rotation group, needed to conform to the new operating style and management techniques. While this is not a totally detrimental way to conduct a contingency, this does tend to create "wrinkles in the plane of operations," hampering the productivity of the unit (Wilson, 2000).

When a unit deploys into an unfamiliar environment, it takes time to become familiar with the support base available, and to determine how to best make use of the human, equipment, and facility resources. This is especially the case with ARC rainbow units, given the multitude of personnel with different backgrounds teamed to accomplish a mission in concert. Significant differences in management styles can alter the flavor of the daily routine in the contingency. Exerting more impact are the differences inherent to rainbow units with different MDS aircraft and technicians. The *amount* of time it takes to

assess the environment and develop a workable approach to the mission becomes the issue. Obviously, the shorter this time, the better. Lack of continuity serves to lengthen this time. Also, the shorter the length of the rotations, the greater the impact of poor continuity, since the familiarization time constitutes a larger percentage of the rotation's effective period.

Attributes of Permanency

Most of the personnel who staffed the Support Cell turned over every week. This continuity obstacle was huge at times; cell staffers were often working to resolve issues with the contingency unit in theater, TACC, and multiple units (such as in trying to fill a DMD). Many of these issues took days or weeks to bring to closure. Handing off issues from one staff member to the next only served to retard the resolution process. Fortunately, the nature of the work in the cell meant that it was more prone to a quicker turnover and shorter familiarization period compared to the unit in theater. Perhaps the driver for this was the guidance of the permanent staff, even if it was minimal at times (Poore, 1999). The permanent staff element was absent in theater.

This leads us to the second part of the continuity question, **'…and if the impacts are great, what can be done to aid stability between rotations?'**

The case of the Support Cell with permanent staff illustrates an important lesson. A permanent staff, even if small in size and/or rank, would bring to the table an established set of procedures addressing operation specifics. Once these procedures are made known to incoming rotation personnel, the group will have a foundation on which to build its approach to work practices. The group could take the base conditions governing the ground level operating conditions and compliment it with its own management style. Additionally, if the established base methods are put in place before a contingency occurs, then there is a procedural outline that a planning office or LMW

could tailor and build upon to fit the needs of the always-unique contingency (Poore, 1999). An example would be the ordering, receiving, and handling of aircraft parts and equipment. A contingency environment should not throw the supply system off balance, even when rotating supply technicians are involved. A concise, agreed-upon set of base operating methods could and should prevent the flow of parts and equipment from negatively affecting maintenance procedures, and ultimately aircraft availability. This is a fundamental of basic planning.

Coronet Oak derives the benefits of a permanent leadership function. At Howard AFB in Panama in the past, AC officers and NCOs had been assigned to oversee Coronet Oak operations by the rotating ARC units. Now at Muniz ANGB in Puerto Rico, five full-time individuals in the 12th Expeditionary Airlift Squadron (EAS) work to ensure smooth support and leadership for Coronet Oak, as well as four logistics officers and NCOs in Detachment 6 of the 612th Air Support Operations Squadron. All are AC members, save for the Commander of the 12th Expeditionary Airlift Squadron, who is a full-time reservist. These skilled individuals may not be able to preclude all problems that may arise, but they can and do steer the rotating units to the 90% solution (Sherwin, 2000).

The question now becomes ‘how can a permanent staff be assembled for unplanned contingency operations?’

In a perfect world, the answer to this question is to assign ARC members to permanent key positions in the Support Cell and the unit in theater. Ideally, these individuals would be in place some time before the contingency kicked off, to facilitate preparation activities, and remain in place as the operation develops, matures, and draws to a close. In the real world of a minimal full-time ARC force and volunteer system for building contingency packages, this is not possible. For Shining Hope, the ARC made a good faith effort to carry out the mission with the existing constraints

discussed earlier. Worth exploring, however, is one course of action that was not used—the Presidential Selective Reserve Call-up.

PSRC - Part of the Answer?

Title 10 of the United States Code serves as the mechanism to activate reserve forces to augment the AC. Title 10 authorizes the President and/or Congress to activate, or 'mobilize,' reserve forces for a specified time period in three different levels of mobilization: full mobilization, partial mobilization, and a lower level called the Presidential Selected Reserve Call-up (PSRC). The Armed Forces Reserve Act of 1952 established the guidelines for full and partial mobilization. The PSRC was enacted by the National Defense Authorization Act of 1976 to give the government more flexibility in calling up reserve forces. Since then, the PSRC has been modified several times (Morrow, 1997:1-6). The drivers for past and potential future modifications spur much debate, and a comprehensive discussion of the PSRC is beyond the scope of this study.

President Bush was the first to use the PSRC, for Desert Shield/Storm in 1990-1991. President Clinton invoked the PSRC for Operation Uphold Democracy in 1994 (Haiti), Operation Joint Endeavor in 1995 (Bosnia), Southwest Asia operations against Iraq in 1998, and for Operation Allied Force in 1999 (Kosovo) (Morrow, 1997:6-8). For Allied Force, approximately 4400 reserve component personnel were called to serve a period of up to 270 days, the maximum allowed by law (virtually all the duty assignments were cut short due to the close of hostilities in Jul 99). Most of these personnel were members of ANG and AFRC KC-135 refueling units, and ANG A-10 units. No PSRC action was used for Shining Hope or any other airlift operations (Palmer, 1999:21).

The last major mobilization of reservists occurred almost 50 years ago during the Korean conflict. Thus, individuals serving in the reserve components before 1990 had virtually no experience with large scale mobilization. "In fact, the likelihood of a reserve

mobilization was probably viewed as so remote that it played almost no role in decisions to join or remain in the reserve forces" (Kirby and others, 1997:19). Obviously, the government's view of the reserve components, and the warfighting and peacetime value they project, has changed in the last ten years. Along with this, views on the proper employment of the PSRC have changed—thus the numerous modifications to the PSRC. A 1995 prepared statement for the Senate Armed Services Committee by Gen Robert Rutherford, Commander in Chief, US Transportation Command, illustrates this point:

> The context of involuntary recall is changing from rare and massive to frequent and tailored…volunteerism is the current methodology for responding to crises before resorting to involuntary call-up. This creates a reliance on troops and skills that may not match the scenario. Availability and tailoring of the right skills is essential to USTRANSCOM getting the job done. We continue to work with the Assistant Secretary of Defense for Reserve Affairs in exploring alternate methods to ensure reserve forces are available to meet our mobility requirements. (Rutherford, 1995:5)

Most would agree that a PSRC action to fully staff a contingency such as Shining Hope is unnecessary. In fact, some ARC members see the PSRC as detrimental to a unit, especially if it is selective in the sense that it taps only portions of a unit. Such an action could cause internal conflict, split the loyalties of unit members, and degrade unit cohesiveness. To prevent this, one may think that the best use of the PSRC is to activate reservists along unit lines (activate the whole unit, perhaps on a rotating basis). Following this course of action would ensure a mission capability for up to 270 days, but it would likely produce some negative fallout; with no hard service commitment for active Reserve and Guard members, there would be a potential flight of individuals leaving the unit after the contingency (Poore, 2000). Others point out that activating only portions of a unit, as was the case with KC-135 and A-10 units in Allied Force, posed only minor, manageable problems in terms of personnel relations (Works, 2000).

PSRC and Volunteerism

Another of the concerns of PSRC actions is its affect on reserve members' employer relations. With reservists volunteering to serve military duty more and more—especially the case with ARC members—more PSRCs would add to the strain of employer relations. The concept of the ARC's mission relies heavily on members being able to obtain a release from their civilian employers. In fact, employer relations is one of the main drivers determining ARC contingency rotation lengths. Reservists' voluntary participation, and thus availability, should be thought of as a consumable commodity. Most employers limit the number of days they will allow paid absences for reserve duty. Beyond this point the individual reservist may need to take a leave of absence, which sometimes incurs a substantial sacrifice. Also, returning to the workcenter after an extended absence often subjects the member to additional job complications when trying to become integrated back into the employer's operations. Consequently, a fall off in participation by reservists is usually noted after a period of high tempo operations (Killingsworth and others, 1993:30).

Sustained high ARC operations tempo also negatively impacts units' ability to maintain reservists' currency in monthly training events. Essentially, there is a conflict in providing peacetime availability and conducting training. This conflict has been articulated in the ANG Long Range Plan:

> The ANG has been pressured to mirror the Air Force in peacetime availability as well as wartime performance…With increased tasking, these two…have become, more and more, mutually exclusive. (Killingsworth and others, 1993:31)

The Air Force acknowledges the reservists' employer relations plight, as evidenced by the support it provides to the National Committee for Employer Support of the Guard and Reserve in Washington, DC. The sole purpose of this organization is to educate

employers on their obligations and DOD's obligations regarding reserve member employees, and mitigate disputed reservist absences.

Family relations are also a concern. Reservists' families are their ultimate support frame and safety net. Minimizing the time spent away from the family, and returning reservists to their families at the times originally planned, is a vitally important aspect of ARC contingencies. If the family is abused in these ways, the result may be a serious retention problem in the ARC (Ryder, 2000).

At the onset of Shining Hope, DOD and AFRC did not see the need for a PSRC. After all, no one knew at the time just how long the contingency would last. Therefore, the volunteer system was perceived as being capable of providing adequate support. Most would agree that for two-plus months, it did. Had Shining Hope lasted any longer, a PSRC almost certainly would have been needed to sustain operations. As indicated earlier, under the volunteer system, the Support Cell struggled to fill rotations in the waning days of the contingency. In fact, AFRC could not support the contingency with five aircraft and the associated personnel for the last couple rotations. Instead, two AC aircraft and associated personnel were called on to round out the rotations (Davis, 2000).

A Limited PSRC

To address the issue of continuity and stability between rotations in an ARC rainbow contingent, perhaps it would be prudent to use the PSRC in a new fashion. Perhaps a PSRC action could be even more (very) selective (we'll call this a limited PSRC) to identify key individuals to serve as leaders or lower ranked mainstays of both the contingency package in theater and its support element in the US (Support Cell). The virtues of permanent staff members have already been pointed out earlier in this report. The option of establishing a permanent presence with a select few individuals

would give senior DOD planners more flexibility in planning for future contingencies. The limited PSRC would be a marriage of the voluntary and involuntary systems for structuring a contingency force, one that retains the more important benefits, and minimizes the detriments, of each.

In the logistics realm, if a lead office were to be identified early and manned with permanent logistics specialists (senior officers or NCOs), then all successive rotation members would have a place to turn for guidance and coordination. This type of arrangement would serve as the "*preheated* iron to smooth out the wrinkles in the plane of operations" (Wilson, 2000). If the contingency lasted for more than a couple rotations, then wings slated to support upcoming rotations would also have a clear Point of Contact to which they could address planning-related questions.

Speaking to the legitimacy of a limited PSRC, the practice would have to be mentioned in an appropriate document sufficient for planning purposes. An OPORD would fill this requirement. While it is true that each future contingency would have to be tailored to the unique situation necessitating it, a general OPORD would still prove to be valuable for planning and execution purposes. The OPORD could include the general instances when a limited PSRC may be warranted; outline decision authorities for the limited PSRC *and* the extent of the contingency; and spell out the responsibilities of those recalled to serve in "permanent" posts. The OPORD could also set timelines if possible; indicate to tasked units the basics to expect in terms of C2 and operating conditions; and communication, information management, and reporting guidelines. Accomplishing such an OPORD would be a tall order, but would likely pay dividends in future contingencies (Snyder, 2000).

Information Management

One other measure that could aid stability between rotations is sophisticated information management. This is another area that is largely beyond the scope of this study, but nevertheless deserves mention. After all, one of the obstacles presented with rotational contingencies is loss of 'corporate knowledge' gained when switching to a new rotation group.

The goal of an orderly information relay system is to preclude each successive rotation from expending time and effort to arrive at the same solutions to perennial operational problems (or actually shorten the familiarization time period). Promising are information systems incorporating automated data storage and retrieval, possible in many forms with today's stand alone and networked computer systems. Ideally, the ARC would have one place where it could manage information—where both reference material would be stored and current information could be added. A database and/or network could be configured to serve as an information repository, endowing the contingency with an organizational memory (Castells, 1999). Configured properly, it could tie into the internet, opening up many avenues: communications with the Support Cell could be enhanced, especially through the transmission of directives and status reports; better coordination between rotations could take place; and units scheduled to rotate in could access the database for use in preparing deployment packages. The information repository could be used not only to *react* to pop-up situations, but also to take a *proactive* stance when preparing for future operational phases. Network-connected databases could become a collaborative tool for all affected parties' planning activities, whether or not the parties are similar in composition and mission (Castells, 1999).

There are some computer applications designed to aid mobility planners and controllers in managing airlift and aerial refueling, such as the Global Transportation

Network and the Global Decision Support System. However, these systems were not designed to take into account the unique requirements of ARC mobility rainbow units.

Similarly, in the Shining Hope Support Cell, established software applications proved to be insufficient for managing DMD issues. For instance, the Personnel Support for Contingency Operations (PERSCO) system of personnel accounting did not provide the needed flexibility for managing the DMD issues. It did not assemble information reports needed to effectively manage the filling and tracking of DMD positions. Instead, Support Cell personnel created from scratch a database tuned to their needs, using common Microsoft applications. In the fall and winter of 1999-2000, 22 AF personnel created a new Microsoft Access database for use in future contingency deployments. Upon AFRC review and approval, the database may be put to the test when the 440th Airlift Wing (AFRC) prepares for and deploys to Ramstein AB in Aug 00 as the LMW for Joint Guardian (Davis, 2000).

V. Supply and Logistical Support Issues

Now we will turn our attention to an area that is much more decidedly logistics oriented. In this chapter, answers to the following question will be explored: **What are the unique supply issues and other logistical support issues regarding an ARC rainbow unit's ability to provide mission capable aircraft?**

Properly equipping and supplying an ARC mobility rainbow unit is a challenge. Root causes for the challenge are not difficult to comprehend. As with other support aspects for this type of contingency, piecemealing logistics support packages from diverse sources is a formidable task, especially against the background of inherent unknowns at the beginning of a contingency operation. Cooperation between participating wings and integrated operations are 'must have' qualities if the contingency is to be successful. Fortunately, these traits are characteristic of the ARC (Millet, 1999:25). In the logistics support portion of a contingency like Shining Hope, however, even these characteristics are pushed to new lengths. Abilities to integrate and cooperate are sometimes exceeded, resulting in inefficient work events (Gamble, 2000). New support strategies may yield significant advances in capability and efficiency in future contingencies. At the very least, outlining the logistics support problems associated with ARC rainbow contingencies will lead to a better understanding amongst present and future players, and aid planning activities.

In AC-supported contingencies, the LMW typically serves as the focal point for supplies and equipment coordination and control, if not providing the supply materials directly. At a minimum the LMW supplies the Mobility Readiness Spares Package (RSP) for use by all participating wings, if necessary. An RSP consists of aircraft parts, supplies, and test equipment that historically was needed to support most maintenance

operations at a deployed location. RSPs are intended for temporary support, with 'temporary' defined in weeks or months (Weaver, 2000).

In ongoing ARC-supported missions such as Joint Guardian, the LMW also directly supplies the operation with necessary materials and/or coordinates the support. Presently the LMW is responsible for a 30-day period for Joint Guardian. When the contingency is composed of different models of aircraft, such as C-130Es, C-130H1s, H2s, and H3s, it is not unusual for the different aircraft packages to opt for bringing a Segment of RSP (sometimes referred to as a Mission Support Kit, or MSK). A Segment of RSP is a smaller package and is more tailored to the specific needs of the type of aircraft being supported. For C-130 contingencies, a Segment typically represents one or two pallets' worth of aircraft parts. In missions such as Coronet Oak where each wing is involved for a two-week rotation, reliance on Segments of RSPs is heavy. A carefully planned Segment of RSP is brought by each wing's package, and covers unique requirements for the individual unit's maintenance needs for the deployment period (Weaver, 2000).

The proper mix of support obtained from the host unit, the home base (arranging transport of supplies into theater), RSPs, and Segments of RSPs can be thought of as the most appropriate blend of a push supply system and a pull supply system. In a push system, adequate varieties and quantities of supplies are made available to the user before the specific needs have been established. Accurate forecasting is key to an effective push supply system. Also important is availability of spare part inventories (Meredith and Shafer, 1999:303-313). In mobility contingency operations, this generally means highest priority support from the host unit and/or transporting mass quantities of supplies and equipment into the theater. Both of these situations are very unlikely. A pull system maintains little or no inventory of spare parts and equipment, but delivers the required items as the need arises (just in time). Key to a pull system is a timely and

reliable transportation system to bring in the needed items (Meredith and Shafer, 1999:297-304). In contingency operations, this means relying on the supply system to deliver required parts and equipment from supply stocks in theater or, more likely, from bases in the US. With this approach delivery times would not allow efficient operations at the deployed site. Finding the optimal blend of push/pull supply systems for contingencies that are often unique is an intricate undertaking.

Supply Issues

To comprehend the importance of proper assignment of support responsibilities for a contingency, one must first understand the impact of transporting multiple RSPs and Segments of RSPs from multiple units to the deployed location. One extreme case is the pure rotational nature of participation in contingency operations, known as the Roulemont policy. In this case all participating wings bring their own supplies and equipment, which may or may not be shared with other wing packages in the contingency unit. This scenario dictates a heavy transportation load into and out of the theater of operations. It can be argued that the airlift capacity is already built into the rotation, with each respective wing transporting its own supplies on its own aircraft (Wilson, 2000).

This is exactly what happens in nonrainbow (single unit) deployments, and ongoing short rotation missions like Coronet Oak. In a contingency more akin to Shining Hope, however, where airlift capacity into and out of the theater is much more critical, the Roulemont approach may be questionable. Wing packages find themselves devoting precious airlift capability to transporting supply loads that are similar in content; the similar supplies are transported in and out of theater over and over. One could argue that in some military conflict situations (those where airlift is desperately needed), at least a *portion* of that airlift capability could be devoted to other pressing airlift needs.

This would be contingent on an adequate supply function already established at the deployed site (Wilson, 2000).

Granted, it would be difficult to fill all aircraft bound for the deployed location with other supplies, materials, or passengers needed in the theater for other missions, since rotating aircraft launch out of home bases scattered throughout the nation. However, coordinating even a small portion of the materials needing airlift with the capability presented by the rotating aircraft could help the overall theater airlift support effort significantly. Exploring the size of these impacts, and the coordination efforts to make this idea a reality, are beyond the scope of this report, but the use of airlift capability presented by rotating aircraft is an important issue in tomorrow's environment of airlift shortages in major regional conflicts.

At the other end of the spectrum is the notion of all supply and equipment support coming from the host unit at the deployed location (assuming there *is* a host unit). Taken one step further, the host unit would turn control over supply assets to the visiting unit. That is, supply and equipment resources would 'chop' (change of operational control) from the host unit to the contingency unit. This is not a realistic option, since the host unit typically has commitments of its own, and a limited amount of supplies and equipment. Also, contingencies at bare bases have nowhere to turn for support.

The challenge with supplies and equipment support comes in determining exactly where between the two extremes outlined above the most efficient support structure lies. The obvious approach is to let the LMW make this determination, relative to the unique conditions of the contingency. Again, with the LMW serving as the focal point for ensuring supplies and equipment availability and *inventory management*, logistical support promises to be solid.

At the beginning of Shining Hope, no one knew how long the operation would last. Therefore it was difficult to determine what was needed in terms of support equipment, and whether or not an RSP was needed. Regarding general support equipment such as powered- and nonpowered-Aerospace Ground Equipment, required equipment was identified in the initial planning of Shining Hope, and assets were piecemealed from participating C-130 wings and other AFRC wings (Snyder, 2000). Only after the mission was a few weeks old was it apparent that an RSP was warranted. At this point, there was no real LMW in theater, and thus RSP makeup and assignment became an issue (Weaver, 2000).

One option for situations like this is to assemble an RSP with assets from a number of different units—units who had participated or were scheduled to participate in the contingency. Piecemealing the assembly of an important element like the RSP can be difficult and chaotic, however (Weaver, 2000). The Support Cell invariably winds up with the task of trying to contact the individual units, and coordinating the assembly and delivery of the RSP. Maintaining the RSP is another issue. Ideally, maintenance units like to maintain control over their respective assets, so that accountability is absolute (Poore, 1999). Still, the occurrence of ARC rainbow contingencies in the future may dictate that a more cooperative approach be taken.

Another option is to have an RSP identified in an OPORD for use in future contingencies. A generic OPORD may have some generalizations, but simply stating that an RSP is needed would serve as the impetus to assemble the RSP beforehand, and even possibly preposition it at a likely contingency site (Weaver, 2000; Poore, 1999). This would need to be an AFRC or ANG asset requiring funding from AFRC or ANG for assembly (Poore, 1999). Replenishment could be the responsibility of the unit that takes items out of the RSP as necessary.

In fact, work is progressing on a revised Joint Forge OPORD which may be of great use to AFRC and ANG for future contingencies operating out of Ramstein AB (Poore, 1999).

One issue with the pre-assembled contingency RSP approach is as follows: If there is a lengthy time between contingencies, and a specific part becomes scarce in the overall supply system, who is to make the decision whether or not to turn to the contingency RSP for the part, control the distribution of the part, and ensure replenishment? And, if it is stored at a predetermined site in the US (versus a likely contingency site overseas), where is storage to take place, and who will oversee it?

In Shining Hope, after it became obvious that an RSP was needed, the Support Cell faced the task of identifying one that would adequately support the contingency unit. Coincidentally, the 94th Airlift Wing at Dobbins ARB underwent a mission change, from an operational mission to a training mission, during the Shining Hope period. With this mission change, the wing lost its RSP requirement. The RSP was subsequently transferred to the 86th Airlift Wing at Ramstein AB for use in Shining Hope. ('Transferring' the RSP meant that the 86th gained accountability for the package—essentially the RSP 'chopped' to the host unit; the visiting ARC units maintained day to day control over the package, however.) This type of chance availability of an RSP cannot be counted on for future contingencies (Weaver, 2000).

The lesson from Shining Hope was that the closer the contingency is configured to the LMW approach, the better the assignment, control, and accounting of supplies and equipment (Weaver, 2000). The difficulties in following the LMW approach were discussed in Chapters III and IV.

Financing the Supply Function

Another aspect of support services that deserves comment has to do with financing purchases of supplies, equipment, and services at the deployed site. With contingencies like Shining Hope, AFRC, ANG, and the Numbered Air Forces do not have a clear way to finance the support operations. Again, typically the support functions are managed by the LMW. When there was no real LMW for most of Shining Hope, participating wings were forced to use their own IMPAC cards for purchasing items not in the federal supply system and services such as rental vehicles (Poore, 1999). As such, individuals who were authorized to use IMPAC cards for purchases were in high demand. The DMD called for a minimal number of IMPAC cardholders, resulting in the need for cardholders to sometimes be available at odd hours to make purchases of needed supplies and services (Boyum, 1999).

Also, with no LMW it was difficult to set up a single account for acquiring returnable items (Element of Expense Investment Code 644 items, known as Depot Level Repairables, or DLR) and expendable supply system items. Such accounts are normally set up through the use of Air Force Form 616, Fund Cite Authorization. This form contains fund cite, funding amounts, unit identification, and routing information. It is the tool used Air Force-wide for setting up supply accounts for deployed units and packages. All of the AF Form 616 and IMPAC card problems meant that financing the supply and acquisition functions were inefficient, and individual wing packages were forced to expend funds for the maintenance effort of its assigned aircraft only (Weaver, 2000). Still, in many instances one wing purchased supplies for one or more other wings in the contingency (Boyum, 1999). While this is a demonstration of the mutual cooperation and support needed for a rainbow contingency, it ultimately leads to the unfair distribution of expenses associated with the operation. Cost accounting and budget reconciliation in individual wings then become difficult at best.

The funding approach of each wing paying strictly for its own support activities is driven by the overall Air Force funding policy for flying units. Funding for aircraft maintenance and logistical support is based on the number of aircraft assigned to a unit. Thus, AFRC could not finance a single account for the support element of Shining Hope, since no aircraft were directly assigned to HQ AFRC. Even if AFRC could somehow manage to establish a consolidated supply account for a contingency, the final bill for DLR supplies and IMPAC-purchased supplies would still need to be reconciled and accounted for by the participating wings, showing costs against aircraft (Weaver, 2000).

Aerial Port Support

One last logistical support issue concerns the aerial port function. Cargo transportation activities—load preparation, uploading, downloading, and processing—were accomplished largely by the Ramstein AB Air Transportation Operations Center (ATOC). The ATOC was kept very busy supporting Allied Force and other operations arising out of the conflict over Kosovo. Knowing that Shining Hope also needed support, and not having aerial transporters on the DMD, AFRC sent some transporters to augment the ATOC. These individuals did not follow the same rotational schedules as those in Shining Hope, and did not report to the rotating ARC leaders. Essentially, the ATOC had operational control over the Reserve transporters. For undetermined reasons the ATOC did not provide satisfactory support to Shining Hope on many occasions (Boyum, 1999). Reasons for this could vary widely, and could be as simple as an ATOC stretched too thin to adequately support the multitudes of airlift missions originating in and passing through Ramstein AB.

The ATOC's operating procedures were observed to be sound, but response timing was inadequate. AFRC and ANG need to find a way to secure adequate aerial port support for future contingencies (Poore, 1999). Alternatives include: establishing

firm support agreements with host unit ATOCs; sending more AFRC and ANG transporters to augment the ATOC if necessary; and/or including sufficient numbers of transporters on the DMD for dedicated support in future contingencies. If transporters are included on the DMD, then another issue is the material handling equipment that would be needed to support an autonomous air transportation effort.

VI. Influence of Command and Control, Continuity, and Supply Issues

Answers to the three investigative questions were discussed in Chapters III, IV, and V. Command and control, continuity, and supply issues are all important elements in determining the degree of success of a mobility contingency unit. When the unit is composed of strictly matrix design ARC rainbow assets, special considerations need to be made in all three areas if the unit is to meet its mission requirements.

One may ask the question *What if one or more of these areas breaks down?* After assessing the outcome of Shining Hope, one may conclude that the mission can still likely be accomplished, but for an undetermined length of time, and at considerable risk of failure. Failure in adequate logistical support could come in the form of contingency cost overruns, supplying an insufficient number of mission capable aircraft for the required missions, or safety mishaps resulting in equipment damage or personal injury. Efficient use of human and material resources would continue to be elusive.

When command and control, continuity, and supply issues are planned for and executed in a fashion tailored to the unique qualities of an ARC rainbow contingency, the result would be a finely tuned Total Force machine that proves the full viability of the ARC matrix organizational design contingency. Resource use would be allowed to reach optimal levels of efficiency and effectiveness. Unprecedented flexibility to respond to changing contingency requirements would also be realized.

Conclusion

Is mission accomplishment capability significantly influenced by logistical support elements in ARC mobility rainbow units? We can confidently answer with a resounding

"Yes." Logistical support is a large part of the overall contingency, and we've seen that ARC matrix units can be relied upon to carry out new missions for the ARC. However, there are unique, significant characteristics that come with this type of unit composition. In Shining Hope the Air Force learned that even when these characteristics manifest themselves in the form of obstacles to mission accomplishment, the ARC has the tenacity and will to stand up to the test and meet mission needs.

To best employ ARC rainbow contingency units in the future, leaders and planners need to understand the capabilities and limitations presented by command and control, continuity, and supply alternatives. Many of the capabilities and limitations are dependent upon factors driven by the implications of a volunteer force. The impacts of volunteerism can be felt in all areas of the contingency, and this report highlighted the specific impacts on continuity in the command and control, aircraft maintenance, supply, and aerial port areas. Continuity concerns can largely be summarized in the heavy influence that a lead unit (or Lead Mobility Wing) can have in directing an efficient operation. An approach that includes LMW concepts as much as possible can yield many benefits.

Air Mobility Command, AFRC, and ANG are to be commended for exploring new and different ways to incorporate the ARC into the overall mission of the Air Force. Even with the constraints of the volunteer force, the ARC augmentation of the active component is substantial in those missions that are ARC compatible—rotational contingencies with firm return dates that allow reservists to remain responsive to their employers' needs. Other services stand to learn much from the Air Force's exploration of force integration methods. Perhaps in the future the Department of Defense can implement collaborative tools to aid various units in different services in planning and executing joint contingency operations.

The future's mobility requirements are likely to include short planning lead times, a trait that the ARC historically has wrestled with. Matrix design rainbow contingency units may be a significant tool to use in providing the flexibility the mobility system needs to respond to a demand that, in the foreseeable future, promises to be volatile.

Appendix: Acronym Glossary

AB	Air Base
AC	Active Component
AEF	Aerospace Expeditionary Force
AF	Air Force
AFB	Air Force Base
AFRC	Air Force Reserve Command
AFSC	Air Force Specialty Code
AMC	Air Mobility Command
AMF	Allied Command Europe Mobile Force
ANG	Air National Guard
ANGB	Air National Guard Base
ARB	Air Reserve Base
ARC	Air Reserve Component
ARNG	Army National Guard
ATOC	Air Transportation Operations Center
AW	Airlift Wing
B.S.	Bachelor of Science
C2	Command and Control
CINC	Commander in Chief
DC	District of Columbia
DLR	Depot Level Repairable
DMD	Deployed Manning Document
DOD	Department of Defense
DPG	Defense Planning Guidance
JTRU	Joint Transportation Reserve Unit
LMW	Lead Mobility Wing
MDS	Mission Design Series
MSK	Mission Support Kit
NATO	North Atlantic Treaty Organization
NCO	Noncommissioned Officer
OPORD	Operation Order
PERSCO	Personnel Support for Contingency Operations
PSRC	Presidential Selected Reserve Call-up
RAF	Royal Air Force
RSP	Readiness Spares Package
TACC	Tanker Airlift Control Center
TALCE	Tanker Airlift Control Element
TRANSCOM	Transportation Command
UK	United Kingdom
US	United States
USAF	United States Air Force
USAFE	United States Air Forces in Europe
USAFR	United States Air Force Reserve
USAR	United States Army Reserve
USNR	United States Naval Reserve

Bibliography

Allen, Scott, Lt Col (Delaware ANG), Operations Officer, 166th Airlift Wing, Wilmington, DE. Telephone interview. 15 October 1999.

Boyum, Bob, Logistics Planner, Logistics Plans Office, 302nd Airlift Wing (USAFR), Peterson AFB, CO. Telephone interview. 8 October 1999.

"C-130 Units Conclude Support for Shining Hope," Citizen Airman, Round the Reserve section, Volume 51, Number 5, October 1999.

Castells, Paul, Maj (ARNG), Program Manager Battle Staff Training Devices, National Guard Bureau—Collective Training Branch, Arlington, VA. Personal interview. 20 October 2000.

Crabtree, Eric, Col (USAFR), Operations Group Commander, 910th Airlift Wing, Youngstown, OH. Telephone interview, 25 May 2000.

Cohen, William S. "Present Conditions Demand that We Use the Total Force", The Officer, Volume LXXIV, Issue 1, January/February 1999.

Cohen, William S., and Gen Henry H. Shelton (USA). "Joint Statement on the Kosovo After Action Review." Washington: Government Printing Office, 14 October 1999.

Davis, Diane, MSgt (USAFR), Logistics Management Specialist (Air Reserve Technician), Contingency Plans Branch, 22nd Air Force Plans Division, Dobbins Air Reserve Base, GA. Telephone interview. 4 February 2000.

Department of Defense. Doctrine for Logistic Support of Joint Operations. Joint Publication 4-0, 6 April 2000. Washington: Government Printing Office, 2000.

Department of Defense. Reserve Component Employment Study 2005. Washington: Government Printing Office, 1999.

Gamble, Larry, Maj (USAFR), Maintenance Supervisor, 440th Airlift Wing, General Mitchell International Airport – Air Reserve Station, Milwaukee, WI. Telephone interview. 18 May 2000.

Griffin, Ricky W. "The Organizing Process – Managing Organizational Design (Chapter 12)," Management (Sixth Edition). Boston: Houghton Mifflin Company, 1999.

Grote, Elizabeth, Col (USAFR), Chief, Logistics Division, 22nd Air Force, Dobbins Air Reserve Base, GA. Telephone interview. 14 October 1999.

Grote, Elizabeth, Col (USAFR), Chief, Logistics Division, 22nd Air Force, Dobbins Air Reserve Base, GA. Personal interview. 18 January 2000.

Hogle, Walter S., Jr., Lt Gen (USAF), Vice Commander, Air Mobility Command. "AMC EAF Spread-the-Word Message," AMC Correspondence Message, 30 November 1999.

Killingsworth, P., and R. Berg, C. Moore, D. Randle, C. Replogle, M. Shanley, and D. Todd. "Guard and Reserve Participation in the Air Mobility System," Rand—Project Air Force Documented Briefing, 1993.

Kirby, Sheila N., David Grissmer, Stephanie Williamson, and Scott Naftel. "Costs and Benefits of Reserve Participation: New Evidence from the 1992 Reserve Components Survey," Rand Report MR-812-OSD, Office of the Secretary of Defense, 1997.

Meredith, Jack R., and Scott M. Shafer. Supply Chain Management and Just-in-Time Systems (Chapter 9), Operations Management for MBAs. New York: John Wiley and Sons, Inc, 1999.

Miller, Jim. "Reservists Busy Supporting Active Air Force," The Officer, Volume 73, Issue 12, December 1997.

Millet, Allan R. "New Challenges Confronting the Reserves and National Guard", Strategic Review, United States Strategic Institute, Boston, MA, Volume XXVII, Number 2, Spring 1999.

Morrow, Robert P, LTC (USAR). Presidential Selected Reserve Call-Up: Panacea or Poison? US Army War College Strategy Research Project, Carlisle Barracks, PA, April 1997.

Palmer, Jennifer. "Kosovo Call-up to Include 2000 More Reserve Airmen," Air Force Times, Volume 59, Issue 42, 24 May 1999.

Poore, Gary, Maj (USAFR), Chief, Contingency Plans Branch, 22nd Air Force, Dobbins ARB, GA. Operation Shining Hope Hotwash slide presentation and notes, Robins AFB, GA, 14 August 1999.

Poore, Gary, Maj (USAFR), Chief, Contingency Plans Branch, 22nd Air Force, Dobbins ARB, GA. Telephone interview. 8 February 2000.

Pulley, John. "Accompanied Tours to Panama May End," Air Force Times, "This Week: Personnel" section, Volume 58, Issue 21, 29 December 1997.

Ripley, Tim. "Time to Pull Together," Jane's Defence Weekly, Volume 31, Issue Number 19, 12 May 1999.

Rutherford, Robert L., Gen (USAF). "Working Together for Defense Transportation System 2010," US Transportation Command Annual Report to the US Senate Armed Services Committee, 23 February 1995.

Ryder, Randolph C., Brig Gen (USAFR), Director of Logistics, Air Force Reserve Command, Robins AFB, GA. Personal interview. 19 January 2000.

Sherwin, Kelly, Lt Col (USAF), Current Operations Officer, Current Operations Flight, 612th Combat Operations Group, Davis-Monthan AFB, AZ. Telephone interview. 25 May 2000.

Snyder, Neal, Lt Col (USAFR), Chief, Air Operations, Current Operations Division, Operations Directorate, Headquarters Air Force Reserve Command, Robins AFB, GA. Personal interview. 19 January 2000.

Voorhees, Brian R., Col (USAF), Dean of Education, Air Mobility Warfare Center, Fort Dix, NJ, and former Director of Mobility Forces for Hurricane Mitch relief efforts, Soto Cano AB, Honduras. Lecture and slide presentation for Director of Mobility Forces Course, Air Mobility Warfare Center, Fort Dix, NJ, 27 August 1999.

Walker, James L., Col (USAFR), Logistics Reserve Liaison, Headquarters Air Mobility Command, Scott AFB, IL. Telephone interview. 18 January 2000.

Weaver, Monica, CMSgt (USAFR), Deputy Chief of Supply, 22nd Air Force, Dobbins Air Reserve Base, GA. Personal interview. 19 January 2000.

Wessel, Patricia, LT (USNR), Joint Transportation Reserve Unit, US Transportation Command. "Naval Reservists Part of USTRANSCOM Team," USTRANSCOM News Service, Office of Public Affairs, US Transportation Command, 30 December 1996.

Works, James V., Maj (Connecticut ANG), Commander, Logistics Support Squadron, 103rd Fighter Wing. Telephone interview. 14 February 2000.

Wooley, Mike, Brig Gen (USAF), Commander, Tanker Airlift Control Center, Air Mobility Command, Scott AFB, IL, air mobility presentation, 12 May 2000.

Wilson, Paul, Flt Lt (British Royal Air Force), RAF Lyneham, Great Britain. Lecture and slide presentation, 12 April 2000.

Vita

Major Kerry H. Nicholls received his commission in December 1986 through the Air Force Reserve Officer Training Corps upon graduating from the University of Wisconsin—Madison with a Bachelor of Science degree. His first assignment was to Chanute AFB, IL, to attend the Aircraft Maintenance Officer Course. In 1988 he was assigned to the 405th Tactical Training Wing, Luke AFB, AZ. In the 405 TTW and later in the 58th Fighter Wing, he served in a number of Aircraft Maintenance Officer positions, assisting the maintenance effort of F-15A/B/D/E and F-16C/D aircraft. In 1992 he was reassigned to the 7061 Munitions Support Squadron, Araxos AB, Greece. His positions included Munitions Maintenance Officer and Emergency Actions Officer. Later that year Major Nicholls was discharged from active duty due to the 1992 Reduction in Force action.

Major Nicholls entered the 440th Airlift Wing (Air Force Reserve), Gen Mitchell International Airport—Air Reserve Station, Milwaukee, WI, in 1994, as a Traditional Reservist. He held the position of Executive Officer for the 440th Maintenance Squadron 1994-1997. In 1998-1999, he served as Chief, Aircraft Generation Flight, managing the on-equipment maintenance of 12 C-130H2 aircraft.

Major Nicholls was selected by Air Force Reserve Command and Air Mobility Command to attend the Advanced Study of Air Mobility (ASAM) program in 1999. He will be a member of the Air Command and Staff College Class of 2001, Maxwell AFB, AL.

REPORT DOCUMENTATION PAGE	Form Approved OMB No. 074-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	June 2000	Master's Graduate Research Project, June 1999 – June 2000

4. TITLE AND SUBTITLE

LOGISTICAL SUPPORT OF AIR RESERVE COMPONENT MOBILITY RAINBOW UNITS

5. FUNDING NUMBERS

6. AUTHOR(S)

Kerry H. Nicholls, Major, USAFR

7. PERFORMING ORGANIZATION NAMES(S) AND ADDRESS(S)

Air Force Institute of Technology
Graduate School of Engineering and Management (AFIT/EN)
2950 P Street, Building 640
WPAFB OH 45433-7765

8. PERFORMING ORGANIZATION REPORT NUMBER

AFIT/GMO/ENS/00E-7

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)

ASC/QI
Attn: Mr. John R. Smith
1865 4th Street
WPAFB OH 45433-7765 DSN: 785-4539

10. SPONSORING / MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

Advisor: Major Alan Johnson (Ph.D.), ENS, DSN: 785-3636, ext. 4284, Comm: 937-255-6565, ext. 4284

12a. DISTRIBUTION / AVAILABILITY STATEMENT

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED.

12b. DISTRIBUTION CODE

ABSTRACT (*Maximum 200 Words*)

One of the military's biggest challenges in maintaining its defense capabilities is deciding on the means to achieve the optimal force integration of its active and reserve components. While the Air Force excels in this area, meeting the continuing challenge includes adopting new approaches to organizing contingency operations.

One such new approach is assigning a certain air mobility mission to a contingency unit composed of multiple ('rainbow') Air Reserve Component (ARC) forces. Recently the Air Force has begun testing the effectiveness of a contingency operation constructed with a rainbow matrix organizational design. Employment of such a mixed organization may hold promise, but it also poses some problems. In the logistics arena, these problems fall into the areas of command and control, continuity, and supply issues.

This study uses Joint Task Force Shining Hope and others to explore the capabilities and limitations of command and control, continuity, and supply issues, and to highlight the impacts of these areas on mission accomplishment. When a contingency is composed of strictly matrix design ARC rainbow assets, special considerations need to be made in all three areas if the unit is to meet mission requirements. Of particular concern are the influence of the volunteer force, and the beneficial effects on continuity that a Lead Mobility Wing format offers.

The Air Force's exploration of new contingency unit composition and logistical support methods serve as important steps in achieving optimal force integration throughout the Department of Defense.

14. SUBJECT TERMS	15. NUMBER OF PAGES
Air Reserve Component, Matrix Organizational Design, Force Integration, Continuity, Command and Control, Supply Issues, Rainbow Contingency Units, Volunteer Force, Lead Mobility Wing, Presidential Selected Reserve Call-up	60
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UL